

Exercise 1

Let h be a function defined by $h(x) = \frac{2 \sin(3x)}{5\sqrt{3x^2}}$. Which of the following definitions of f and g satisfy $(f \cdot g)(x) = h(x)$?

Multiple Choice:

- (a) $f(x) = 2 \sin(3x)$ and $g(x) = 5\sqrt{3x^2}$
- (b) $f(x) = \frac{1}{2 \sin(3x)}$ and $g(x) = 5\sqrt{3x^2}$
- (c) $f(x) = \sin(3x)$ and $g(x) = \frac{10}{\sqrt{3x^2}}$
- (d) $f(x) = \frac{2 \sin(3x)}{5}$ and $g(x) = \frac{1}{\sqrt{3x^2}}$ ✓

Let h be a function defined by $h(x) = 2x^2 + 2x - 2$. Which of the following definitions of f and g satisfy $(f + g)(x) = h(x)$?

Multiple Choice:

- (a) $f(x) = 2x^2$ and $g(x) = 2x + 2$
- (b) $f(x) = x^2$ and $g(x) = x^2 + 2x$
- (c) $f(x) = x^2 + x - 1$ and $g(x) = x^2 + x - 1$ ✓
- (d) $f(x) = x^2$ and $g(x) = x^2 + 2x - 1$

Let h be a function defined by $h(x) = \sin(x) - \cos(x)$. Which of the following definitions of f and g satisfy $(f - g)(x) = h(x)$?

Multiple Choice:

- (a) $f(x) = \sin(x) + \cos(x)$ and $g(x) = 2 \cos(x)$ ✓
- (b) $f(x) = 2 \sin(x)$ and $g(x) = \cos(x)$
- (c) $f(x) = \sin(x)$ and $g(x) = -\cos(x)$
- (d) $f(x) = -\cos(x)$ and $g(x) = \sin(x)$